REMARKS/ARGUMENTS

In view of both the amendments presented above and the following discussion, the Applicants submit that none of the claims now pending in the application is anticipated under the provisions of 35 USC § 102. Thus, the Applicants believe that all of these claims are now in allowable form.

If, however, the Examiner believes that there are any unresolved issues requiring adverse action in any of the claims now pending in the application, the Examiner should telephone Mr. Peter L. Michaelson, Esq. at (732) 530-6671 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Specification amendments

An amendment has been made to the specification to correct a minor, inadvertent, typographical error. Support for this amendment is found on, e.g., page 3, lines 13-22.

Status of claims

Claim 5 has been amended to recite the present invention with enhanced precision.

No other claims have been amended. No claim has been canceled or added.

Rejections under 35 USC § 102

The Examiner rejected claims 5-8, as they stood prior to this amendment, as being anticipated under the provisions of 35 USC § 102(b) by the teachings of the Yates et al application (International published patent application number WO 96/25012). The Applicants have now amended independent claim 5. To expedite prosecution, the Applicants will discuss this rejection principally in the context of claim 5, as it now stands. In that context this rejection is respectfully traversed.

Specifically, the Examiner takes the position that each element of claim 5, as that claim previously stood, is identically disclosed in the Yates et al application. To support his position, the Examiner states "Yates teaches a service provision system for use in providing information services over one or more communication networks, has a software infrastructure divided into domains (101, 103, 104, 106.) Each domain has an intelligent software agent (102, 107, 109, 100) and this community of agents sits in a computing environment represented in each domain by a DPE kernel (105)." While the Applicants have a different view with respect to the prior version of claim 5, the Applicants clearly disagree with the Examiner's position with respect to claim 5, as it now stands.

As previously discussed in their prior amendment mailed October 17, 2005, the Applicants recognize in pages 1 and 2 of their specification (these and all page references hereinafter to the Applicants' specification are to the substitute specification filed with that prior amendment)

that traditional agent-based systems suffer various drawbacks.

In particular, given that such agents maintain mutual contact through a computer network, such inter-agency communication tends to impart a significant burden on a network. Furthermore, to implement such communication and other related functionality, such as mutual co-operation with other agents, each agent tends to be functionally rather extensive and, as such, implemented through a complex computer program. Moreover, a particularly important drawback, namely a security risk, arises from the fact that the agents share information amongst themselves and are each free to communicate with a variety of different actors (including humans). By virtue of such inter-agent communication through which information is typically freely shared amongst different agents, confidential information belonging to or concerning one user may well be provided to another user, thus breaching and possibly destroying the confidentiality of that information.

Advantageously, the present invention remedies these deficiencies by providing a strict hierarchical agent-based arrangement with fixed rules of communication, through which a personal agent associated with just one single individual user only interacts with personal service agents associated with that particular personal agent and no other. The personal service agents perform specific sub-tasks only for and communicate with that particular personal agent. See, e.g., page 2, line 27 et seq and page 4, line 29 et seq of the present specification.

For example, as shown in FIG. 1, the inventive agent system may illustratively contain four different personal agents 11-14. Each of these agents is associated with only one corresponding individual user. Each user can access his(her) agent through PC 60 (or any of PCs 60' used in a networked environment shown in FIG. 2). Each of these personal agents interacts with one or two associated personal service agents within environments 30 and 40. As shown, personal agents 11 and 12 interact with personal service agents 31 and 21, and 22 and 32, respectively; personal agent 13 interacts just with personal service agent 23 in environment 20, and personal agent 14 interacts just with personal service agent 34 in environment 30. Each of the personal agents passes on orders from its associated individual user, but no one else, to its associated personal service agent(s) based on the needs of that user and instructs that personal agent to undertake a corresponding sub-task. Because each personal agent and each personal service agent, by virtue of the fixed and strict hierarchy, do not handle tasks for multiple users, confidential information for one user is not exchanged with any other user. This, in turn, significantly heightens security over that provided by traditional agent-based systems. Moreover, each personal agent and its associated personal service agents do not directly communicate with any other such agent, but only through a neutral process (neutral coordinating system), such as processing part (process) 41, which coordinates the actions of all the personal service agents, including information exchange there between, for tasks that ultimately involve multiple users. Consequently, inter-agent communication is significantly reduced over that which would occur in traditional agent-based systems, hence

advantageously reducing network traffic. Furthermore, eliminating a need for each personal agent and personal service agent to maintain direct inter-agent communication with every other such agent greatly simplifies the programming of each such agent over that heretofore required in the art.

The Yates et al application teaches a system for provisioning telecommunication information services over more than one communication network. To the extent relevant to the present invention, the system taught by the Yates et al application utilizes a multi-agent based software infrastructure where the agents are reconfigurable and reside in corresponding domains. See, e.g., col. 3, line 27 et seq of the Yates et al application. The domains effectively divide the infrastructure into certain areas which relate to various functional entities. See, e.g., page 7, line 8 et seq. As expressly discussed on page 4, line 6 et seq and page 9, line 7 et seq, each reconfigurable software agent may comprise or have access to a plurality of software modules; thus, the agent can reconfigure itself, at least in part, by invoking certain selected sets of those modules based on that agent having modified or substituted policies of objects which that agent may use. In that regard, a selected set of modules invoked by an agent can provide run-time realization of the service provision system, as determined by a particular agent configuration.

With reference to a specific implementation, the Yates et al application teaches in page 19, line 19 et seq and as shown in accompanying Figure 11, that two types of agents reside on a common computational node: terminal

agent 102 and user agent 107. These agents are provided with data of various types, including user profiles stored within profile store 1103. These agents also have access to other data stores available through transport network 1100, which include a policies data store 1104 and a management information data store 1105. Policy data store 1104, as explicitly stated on page 19, line 25 et seq, "allows a user access agent to reconfigure itself in order to change its response to user interactions." Management data store 1105 may provide global management information regarding services. Each computational node, such as that shown in Figure 11, included a DPE (distributed processing environment) kernel 811.

As described on page 22, line 17 et seq, a user agent represents and acts on behalf of a user. It receives requests from users to establish service sessions or join existing service sessions, and creates or negotiates with existing service sessions as appropriate. A user agent also receives and processes requests to join a service session from service sessions themselves.

As described on page 22, line 27 et seq, a terminal agent is responsible for representing a terminal, and specifically obtaining a precise location of a terminal.

In order for users to access a service, the Yates et al application teaches that users must first associate their user agents with terminal agents -- which occurs as part of a "log on" process. A user may be simultaneously associated with many terminals; similarly, a terminal may be simultaneously associated with many users. See, page 23,

line 1 et seq. It stands to reason that what this apparently means is that one user agent can be associated with many different terminal agents, and one terminal agent can be associated with many different user agents.

With this organization in mind, Figure 10 of the Yates et al application depicts a computational view of the access and session concepts. As is readily apparent, a user agent and a terminal agent both associated with a corresponding end user application -- through a log on procedure -- are directly accessed by and have direct access to that end user application, with both depicted end user applications being able to directly communicate with each other through a session there between and established through the agents and also the service and session communication managers connected to both user agents. In essence, this arrangement establishes a telecommunication link, such as a voice call, between the two depicted user applications.

There is simply no disclosure in the Yates et al application indicating that the information available to one user agent, such as agent 107 shown in Figure 11, for one user can not be freely shared or communicated to the other user agent 107' for use by the other user. In fact, there appear to be no teachings whatsoever in the Yates et al application of any methodology that restricts the flow of information, let alone confidential user information, between individual agents. The system taught by that application simply has no provision to restrict inter-agent information flow -- in sharp contrast to that which the present Applicants now teach. Moreover, in light of the

fact that one user agent (terminal agent) can apparently be associated with multiple terminal agents (user agents), a significant potential exists that confidential user information can and will be disseminated by and shared amongst different agents.

The Yates et al application appears to be simply oblivious to the problem which the present Applicants address and advantageously solve -- namely recognizing that confidential user information is inadvertently communicated among agents in a traditional multi-agent system and how such a system can be modified to efficiently and effectively restrict, if not eliminate, all such inadvertent communication.

While the Examiner is certainly correct in noting that the Yates et al application discloses an agent-based system, the agents are not configured, as the present Applicants now teach, in a strict hierarchy which, through fixed rules of inter-agent communication, significantly limit information flow between the agents so as to protect against inter-agent dissemination of confidential user information. In that regard, as the Examiner can see from Figure 10 in the Yates et al application, the user and terminal agents (107 and 102, and 107' and 102') are not situated in a strict hierarchical arrangement where the output of one solely feeds the input of the other, but rather here they are coincident, i.e., both agents are connected directly to their associated end user application. This stands in sharp contrast to the Applicants' hierarchical arrangement.

Contrary to the Examiner's view, the Yates et al application totally fails to disclose the hierarchical agent-based arrangement which the Applicants now teach and which claim 5 specifically recites, and particularly one in which each of the personal agents and personal service agents merely serve just one single associated individual user, and where the communication amongst the personal agents for different users occurs only through the personal service agents for those users and is coordinated through a neutral coordinator so as to control the flow of user information, including confidential information, amongst the different personal agents. The coordinator operates using predefined rules which define a so-called "social hierarchy" of, e.g., agents and personal service agents, and, by so doing, specify which personal service agents can communicate with each other and what specific information can be passed from one to the other. See, e.g., page 6, line 28 et seq of the present specification. Since the hierarchy prevents unnecessary communications, it also provides the salutary result of reducing a load on the communications network.

Consequently, the Yates et al application simply stops well short of teaching the Applicants' present invention.

Independent claim 5 contains suitable recitations directed to the distinguishing aspects of the present invention. This claim recites as follows, with those recitations being shown in a bolded typeface.

> "A **hierarchically-structured personal agent system** within a computer system, the personal agent system comprising:

a personal agent sub-system having a plurality of personal agents, each one of said personal agents being arranged to perform tasks for only one single individual user;

at least one service agent sub-system comprising a plurality of personal service agents, each of said personal service agents being arranged for carrying out a specific sub-task for one of said personal agents; and

a coordinating sub-system comprising at least one coordination processor for mutual coordination of actions of said personal service agents for different ones of the users;

wherein, in order to control flow of user information amongst all the personal agents, the personal agents for different ones of the users only communicate with each other through their corresponding ones of the personal service agents, and the personal service agents associated with all of the personal agents only communicate amongst themselves through the coordinating sub-system." [emphasis added]

Inasmuch as these distinguishing recitations are not shown, taught or disclosed by the teachings of the Yates et al application, then this claim is not anticipated by those teachings and hence is patentable, under the provisions of 35 USC § 102(b), there over.

Each of dependent claims 6-8 directly depends from claim 5 and recites further distinguishing aspects of the present invention. Consequently, each of these dependent claims is also patentable under the provisions of 35 USC § 102(b), over the teachings of the Yates et al application, for the same exact reasons set forth above with respect to claim 5.

Conclusion

Consequently, the Applicants believe that all their claims, as they presently stand, are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

Respectfully submitted,

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Peter L. Michaelson, Attorney
Reg. No. 30,090
Customer No. 007265
(732) 530-6671

MICHAELSON & ASSOCIATES
Counselors at Law
P.O. Box 8489
Red Bank, New Jersey 07701-8489

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